K-STATE
Research and Extension

Winter Canola Production in Kansas:

Producer Experiences

Kansas State University Agricultural Experiment Station and Cooperative Extension Service

Contents

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Introduction

For agricultural producers in Kansas, growing a new crop is rarely easy. It takes a leap of faith, a strong motivation, or both to start raising an unproven crop. With the high cost of inputs, crops planted today involve a greater degree of risk, and that risk is magnified with a new crop such as winter canola.

One of the best ways to decide whether to plant something new is to talk to other producers who have some experience. That is not always possible to do in person — that is the reason for this publication.

We present the experiences five producers had growing winter canola in different parts of Kansas. The producers explain why they began growing canola, the production practices they use, the yields, the advantages and disadvantages, and the economics of canola production on their farms.

Our hope is that this can give some unique, valuable, and practical insights to producers in Kansas who are thinking about growing canola. Additionally, experienced producers may learn techniques to refine their production practices.

Winter canola as a potential crop in Kansas

Winter canola is a cool-season broadleaf crop grown in rotation with wheat and other crops. Canola seed is processed into healthy, edible cooking oil and a high-protein meal for livestock. To meet the increasing domestic and world demand for cooking oil and meal, more canola must be grown.

Canola was first introduced into Kansas where wheat is grown under a monoculture cropping system. Grassy and broadleaf weeds that plague continuous wheat can be controlled effectively with herbicides used in canola. Canola has a taproot that can break up hardpan in soil and reach buried moisture and nutrients. On a practical level, growing canola may be easier and more appealing than many other new crops because the equipment used to plant and harvest canola is the same as used in wheat production.

The number of winter canola acres in Kansas is growing. USDA Farm Service Agency data show from 2009 through 2012, planted acres grew from 6,870 to 31,000. Winter canola is produced primarily in central Kansas under dryland conditions and in southwest Kansas under limited irrigation.

Water use for winter canola is typically 20 inches or less per growing season. Approximately 6 inches of available soil moisture are needed to produce the first measurable yield. Canola then produces about 3.5 bushels per acre for each additional inch of available soil moisture. Typical yields under dryland conditions in Kansas range from 30 to 50 bushels per acre (Figure 1). Under irrigation, yields greater than 60 bushels per acre can be achieved. A bushel of canola weighs 50 pounds.

Producers in this publication

In this publication, we interview five winter canola growers across Kansas. Experience levels of the producers range from 2 years to 10 years. Each is committed to using canola to increase overall profitability, improve sustainability, and meet the growing world demand for canola and its co-products.

The locations of producers interviewed are shown in Figure 2. Bob Schrock of Kiowa, Greg Turek of Caldwell, and Cody Swinehart of Norwich grow winter canola in southern Kansas where a significant need for crop rotation exists. Winter annual weeds and diseases plague continuous wheat production in their area of the state.

Dean Elvin of Marquette grows winter canola in central Kansas. Wheat is the primary crop in his area; however, rotation options include summer crops. Weed control can be a challenge in wheat, and summer crops often succumb to heat and drought stresses.

Producer Tyson Good of Montezuma grows winter canola in southwest Kansas under limited irrigation. A significant need exists for more water-efficient crops as the water table continues to decline in his area. He grows winter canola in 30-inch rows to manage residue, which is critical for moisture and soil conservation.

Acknowledgments

We would like to thank the five producers for sharing their stories with a broad audience of readers and for being innovators and leaders in winter canola production. We would also like to thank Dan Donnert, K-State Research and Extension photographer.

Michael J. Stamm, Associate Agronomist

Steve L. Watson, Assistant Scientist

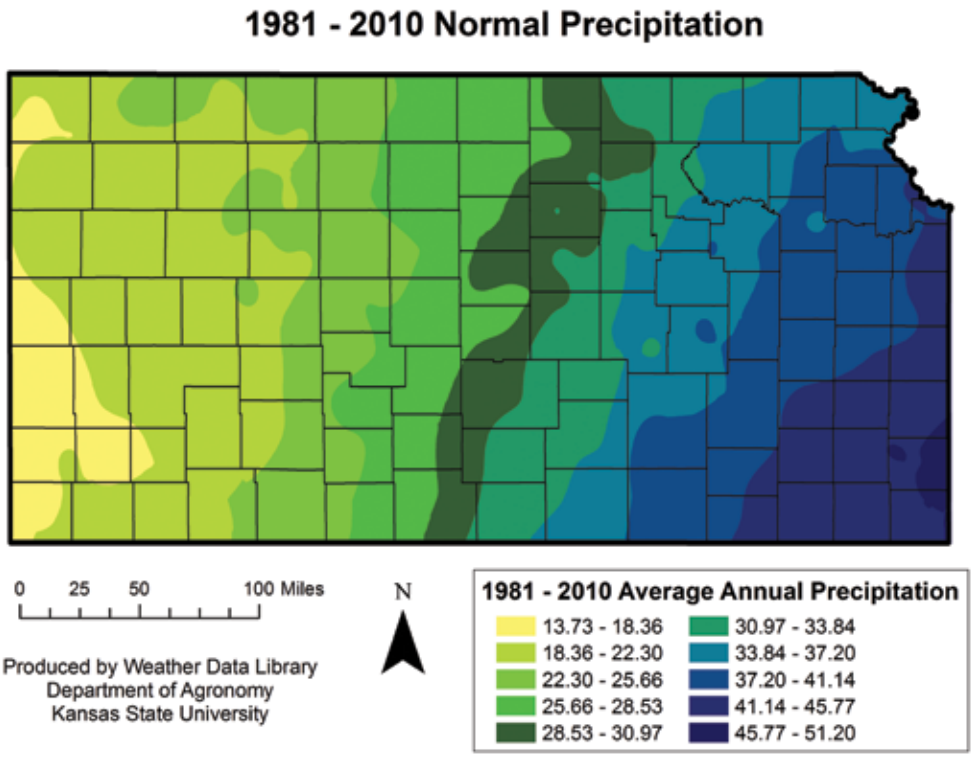

Figure 1. *Annual precipitation patterns across Kansas.*

Figure 2. *Locations of producers interviewed for this publication.*

Bob Schrock — Barber County

Canola has great potential, and when rotated with wheat does wonderful things for yield and quality, according to Bob Schrock, southern Barber County and northern Oklahoma farmer.

Schrock farms in the heart of continuous wheat and cattle grazing country, where the average annual rainfall is 29 to 30 inches, although that varies considerably.

Like many producers in southern Kansas, Schrock's operation was exclusively focused on cattle, but it is all grain and no livestock now. All his crops are dryland, and he has been using no-till production since 2007.

"I grow mostly wheat and canola, with a rotation of 2 years wheat and 1 year canola. I also have corn, grain sorghum, and sesame in my rotations," Schrock said. He farms mostly medium-textured soils with some terraces.

> I've seen a lot of times when canola has netted $150 an acre more than wheat, just because of the price difference.

Production practices

Schrock's canola management program starts well before the seed goes in the ground.

"We'll take a 3-foot deep soil sample and see how much nitrogen is left over in the profile. The results will affect how I go about applying nitrogen for the crop. If there's not much residual nitrogen, I'll put on about 70 pounds as anhydrous ammonia in July, then apply phosphorus and zinc with the seed. I put on the balance of the nitrogen along with 15 pounds of available sulfur in mid- to late-January. I'm shooting for a yield goal of about 45 bushels per acre. Canola needs about 2 to 2.8 pounds of nitrogen per bushel. So for 45 bushels, it will need about 126 pounds of nitrogen," he said.

To apply the anhydrous ammonia preplant, he uses a Blu-Jet no-till applicator that has a coulter, mini mole knife, and press wheel on 20-inch centers.

"If I'm going to make this no-till cropping system work, I have to inject nitrogen into the ground somehow. So if I'm going to put nitrogen into the ground, why not use anhydrous ammonia and save money compared to liquid nitrogen?" Schrock said. After applying the anhydrous, he runs a heavy harrow if needed to distribute straw before planting canola.

He has all his soils grid sampled, and applies variable-rate fertilizer with his air seeders according to those grids. He variable-rates lime and everything else except nitrogen.

"Lime is an important part of my program. This area has a lot of low-pH soils. With all the years of grazing wheat and removing all that forage, our pH levels were getting into the low 5s. I've been liming for about 15 years, and now I've got my pH levels up to about 6.2. I use liquid lime from wastewater treatment plants and have it applied

Schrock uses a Blue-Jet no-till anhydrous ammonia applicator with a coulter, mini mole knife, and press wheel on 20-inch centers.

Schrock uses a heavy harrow to distribute residue after applying anhydrous ammonia.

on the surface. Because it's so fine, the water takes it into the soil much better than ground ag lime, in my opinion," he said.

Schrock uses two different air seeders — a John Deere 1870 Conserva Pak precision hoe drill and a John Deere 1890 single-disk drill. Getting a good stand of canola, and keeping it going through the first few weeks of its life, is one of the biggest challenges, he said.

"I use the 1870 hoe drill for all my canola and double-cropped grain sorghum, along with a fair amount of wheat and some sesame. I use the 1890 disk drill for wheat predominantly, although I also plant some sesame with it," he explained.

He likes the hoe drill because it can bring up soil moisture. "With the hoe drill, if we have to go down to moisture, it'll do it. We're getting more consistent canola stands with the hoe drill in a lot of situations. And we're able to put on as much fertilizer as we want with it because we have good separation between the fertilizer and the seed, whereas on a disk drill we do not," Schrock said.

Shrock's John Deere 1870 hoe drill is used for canola, double-cropped grain sorghum, wheat, and sesame.

Schrock plants canola in a single row on 12- or 24-inch centers, although the 1870 drill can also plant in paired rows.

"The 1870 has different seeding tubes. There is a single row that puts the seed into one side of the furrow, and a paired row setup that puts seed into both sides of the

Which Harvesting Method Is Best?

There may be no more hotly contested topic related to canola production than harvest methods. There are three primary methods available:

- Swathing then combining
- Direct combining
- Pushing then combining

In addition, some producers use a desiccant before direct combining, while others do not.

Generally, producers with larger acreages swath and then combine canola. Producers with smaller acreages direct combine. Producers have options and each method has advantages and disadvantages.

A recent K-State and Oklahoma State University study compared yields from canola swathed at the optimum time to yields from direct-cut canola. Swathing resulted in greater yields than direct combining at Stillwater; however, the greater yields were likely a result of shattering caused by strong winds affecting the direct combining treatment. In Hutchinson, direct combining resulted in higher yields than swathing. This may be attributed to high temperatures following swathing. There was no yield difference between swathing and direct combining in Manhattan.

Yield results for harvest management methods, 2008-2009.

Location	Direct	Swath
Hutchinson, Kan.	1,520	1,172
Manhattan, Kan.	2,037	2,012
Stillwater, Okla.	1,166	2,156

Results from this study indicate that both swathing and direct cutting can be successful harvest options in the southern Great Plains. Results from Hutchinson indicate that timing of swathing is important and should be performed during cooler periods of the day. Results from Stillwater indicate that swathing provides some protection over direct combining when shattering losses are imminent.

The decision of which harvest method to use depends on the number of acres to harvest, the producer's tolerance to risk, the availability of equipment, and the costs involved. Inexperienced canola producers should consult with experienced producers, share equipment with neighbors, or take advantage of regional custom harvesters.

For more information about all harvest/preparation options, see MF3092, *Harvest Management of Canola*, at the K-State Research and Extension bookstore. (*www.ksre.ksu.edu/bookstore/pubs/MF3092.pdf*)

furrow, offset a little bit. We use both kinds of setups. I use the single row for canola, sesame, and grain sorghum. With the single row, the fertilizer is placed about 4 inches deep in the furrow. Then the seed is placed about 1.5 inches into the side of the V-slot furrow, and above the fertilizer band," he said. "Because of the 3-inch sweep with the paired row setup, the ground is a little rougher, which is harder on swathing equipment."

Another concern with the paired rows setup in canola is intra-row competition. "We found that the seedlings stretched out too much, competing with each other for sunlight. This results in a condition called 'high leg.' Winterkill becomes an issue when this happens because the growing point is raised to an elevated point above the soil surface. So I'd rather reduce my seeding rate and put the seed all in a single row. Then we get better winter survival and my fields aren't quite as rough," he explained.

The 1870 leaves residue between the seed rows, but gives a narrow strip of clean soil above the seed row where the canola will emerge, like strip-till. That's my insurance policy for getting a stand with canola," he said.

"Canola will establish better if it doesn't have to come up through residue, so minimal disturbance no-till planting doesn't usually work very well. Full tillage also has its own set of problems for canola. I've seen fields where there was a lot of tillage done that out performed no-till fields by a little bit. But it's just very hit-and-miss," he said.

In his experience, when using a double-disk drill into a tilled seedbed, it is hard to get a consistent stand. The dilemma is that while canola emerges better if there is no residue, the hot, dry winds increase soil moisture loss.

"In late August and September, we get hot, dry winds around here that can dry out the top inch of soil very quickly. That can make it tough to establish canola. With conventional tillage, it's a challenge to get canola consistently planted firmly into a good, firm, moist seedbed at the one-inch depth with a double-disk drill," he said.

No-tilling canola with a single-disk drill can be a little more consistent, but it's still tough if there's much residue directly above the seed row as the canola is emerging, he added.

"With the 1890 no-till single-disk drill, the most consistent way to get a good stand of canola is to leave the wheat residue on the ground all summer, then burn it off a day or two before you plant. That keeps the ground cool and the moisture conserved. When you burn, it draws the moisture closer to the surface for the following day or two. A lot of people don't like to burn, though, because you lose some nutrients and organic matter."

The biggest challenge with burning the residue is keeping the seedlings alive after they have emerged, he

A condition called high leg results when the crown does not sit on the soil service but on top of residue in the seed row.

The paired row setup for the John Deere 1870 is pictured here. The fertilizer shank runs in front of the seed tube.

Schrock can plant canola through heavy wheat residue with the John Deere 1870 hoe drill.

added. There's nothing to protect the seedlings because the residue is gone.

Based on the conditions present at planting, Schrock may vary his planting procedures. He plants between 3 to 4 pounds of seed per acre.

Schrock uses Roundup Ready canola varieties, which determines his weed control program.

The 1870 leaves residue between the seed rows, but gives a narrow strip of clean soil above the seed row where the canola emerges.

"After the canola stand is up, I go in about October 15 when we usually start getting some volunteer wheat and feral rye, and spray glyphosate to control those grasses. Canola can't take much competition for moisture the first 2 weeks of its life, thus the timing of the first glyphosate application is important. After that, the plants get stronger. With the first application of glyphosate, we add in a pyrethroid insecticide to knock out the diamondback moth larvae," he said.

There are insect pests throughout the season with canola, he said.

"We're always on the lookout for insects. But instead of scouting the canola fields every week all winter long, we systematically apply insecticides. I do practice integrated pest management, but if you treat for insects proactively instead of reactively, you'll have much better luck."

Before canola bolts, he puts on his spring application of glyphosate.

"At that time, if I see any insect pests out there, I can put another shot of insecticide with the glyphosate. Then the fields will be clean until about mid-bloom. Around that time you usually get cabbage aphids migrating in. You need to take them out with an airplane or a row crop sprayer. In total, it usually takes 2 to 3 applications of insecticides most years," he said.

Schrock said he may have to start using a fungicide on canola. "I had some blackleg disease recently in some of my fields, and it lowered my yields. I put fungicide on in the fall, but it was too late. We also had some winter decline syndrome. I think as we get more acres of canola, we'll probably develop a few more disease problems," he said.

Shattering can be a problem with canola, depending on how the crop is handled at harvest time. Canola doesn't usually ripen evenly. Terrace tops will ripen first, and they'll start to shatter while the draws are ripening.

"If you try to wait until the whole field is ripe and straight-cut it, you're probably going to have some shattering problems. I get around that by swathing it and killing it all at one time, and letting it dry down to get the chlorophyll out of it, then pick it up. I'd say 100 percent of the canola within 30 miles of my area is swathed," he said.

Profitability and marketing

Canola has improved the profitability of his cropping system, Schrock said. Still, it's not uncommon for production costs to be higher with canola than wheat.

"In my situation, I'm probably investing about $50 to $70 more per acre with canola than wheat because of swathing, insecticides, slower harvesting, two glyphosate applications, and seed costs of about $30 per acre. But if you take that $70 and the next year you get an extra 15 bushels per acre more wheat at $8 per bushel, you've almost doubled your money in my area," he said.

"If you're raising 30-bushel wheat with lots of dockage and other problems year after year, wouldn't you like to have clean, high-yielding wheat, especially at today's wheat prices? If you pocket 15 more bushels of wheat next year at today's prices, and have it be clean, then add several more

Schrock has used pull type draper swathers with roller attachments to prepare his canola for harvest.

bushels the following year, too, that's a huge benefit," he said.

And canola is usually profitable in its own right, even with the extra expense, he added. Canola prices are usually about $3 to $5 a bushel higher than wheat, although yields are usually a little less. "I've seen a lot of times when canola has netted $150 an acre more than wheat, just because of the price difference.

Canola yields vary from year to year, he said. "I've grown from 8- to 60-bushel canola. Our average is about 36 bushels per acre. I'm hoping to raise that some so that we can average 45 bushels per acre as we continue to learn and get better at it," he said.

A National Winter Canola Variety Trial planted on Shrock's farm near Kiowa, Kan.

"You can figure that canola will probably yield about 80 percent of what your wheat yields in terms of bushels per acre. If your wheat's making 50, your canola will probably make about 40. That's a pretty good rule. If you're comparing low-quality, dirty wheat with canola, yields will be similar." Schrock reported.

Other benefits of having canola in the rotation

A rotation of wheat and winter canola has benefited Schrock's overall cropping system in many ways.

"Our weed pressure from mustards and pepperweed has really dropped off since we've been in this rotation. In this wheat/canola rotation, we seem to be depleting the seed bank of mustards," he said.

"We also used to have a lot of cheat, jointgrass, and rescuegrass from being in continuous wheat and planting early for intensive grazing. Since we've been rotating, we're staying ahead of that now."

Having canola in the rotation also breaks up the disease cycle in continuous wheat, including root rots and crown rots, Schrock said.

Also, canola has a deep taproot compared to the fibrous root system of wheat.

"The canola growers here and the canola team at Oklahoma State University have found that the taproot of canola will go down 5 feet and pick up some nitrogen from the deeper layers of the soil. I've done some auger sampling for nitrogen, and we've found a decent amount of nitrogen deep in the soil that the wheat hasn't been able to mine. When the canola residue breaks down we get the benefit of that nitrogen in the subsequent crop," he said.

Advice for canola growers

Canola is a management intensive crop. First-time growers should consider talking to someone who is experienced to find out what to expect.

"The biggest challenges to growing canola are getting a stand, maintaining early-season growth, shattering, and winter survival. All of these challenges can be managed, however. Using the right planting methods can help in getting a stand and winter survival, and using the right harvesting methods can help avoid shattering. The current varieties have much better winter hardiness than the varieties available several years ago," he said.

Growers should be prepared to make connections with other growers, university agronomists, consultants, and custom applicators.

"I like to visit with the custom applicators 100 miles south of me. What are you seeing? Are you spraying yet? That gives me about a 2-day warning. We're working to develop a good network to help people out with phone calls and emails letting others know when there's a problem developing in southern areas. We also have agronomists at K-State and OSU who can help," he said.

Summary

The technology and equipment available now make farming work in ways that were not possible before, Schrock said.

"The John Deere 1870 air seeder, the Blu-Jet no-till anhydrous equipment — all this stuff wasn't here 10 years ago. It enables us to do things on limited rainfall. I'm just trying to learn from what they've been doing in other dry regions such as western Canada and Australia," he concluded.

"We've just begun to figure out how we can fully realize the benefits of having canola in our rotations."

Cody Swinehart — Kingman County

"The biggest advantages of growing canola include the profit potential of the crop and the ability to get feral rye and cheat controlled on land that had been in continuous wheat," said Cody Swinehart, Kingman County farmer.

"I've heard that wheat often yields about 3 to 5 bushels per acre better when it follows canola than when it follows wheat. I haven't seen that yet, but I've only had canola in my crop rotation for 3 years. I'll be interested to see if our wheat yields improve," he said.

Swinehart's soils are quite variable, ranging from clay loam to fine sandy loam — often in the same field. The soil pH level on most of his fields is about 5.2 to 5.8, which is acceptable for both wheat and canola. He is applying lime at a variable rate to achieve a pH closer to 6.0, however.

Like that of most farmers in the region, Swinehart's cropping system was continuous wheat until 2008. By that time, however, there was so much feral rye in his wheat fields that he knew he had to change.

"At first we tried growing grain sorghum and soybeans in rotation with wheat. But those crops don't always do as well as cool-season crops in our area," he said.

In 2011, he heard about the Canola U conference in Oklahoma City. As a winter broadleaf crop, canola seemed like it might have better potential than grain sorghum or soybeans as a rotation crop for wheat, Swinehart said.

"I went to that conference, and it sounded good, so things just kind of went from there. I went to several more meetings on canola production and marketing, and talked to an oilseed crusher in Oklahoma City. I made the decision to try growing it," he said.

Landlords not familiar with canola may not be enthusiastic about it at first, but as weed problems continue to get worse in continuous wheat the need for some kind of change in cropping systems becomes more apparent, Swinehart said.

Production practice

His rotation plans involving canola and wheat are still evolving. "I may go with 2 years of wheat and 1 year of canola, but I'm still testing this to see what will work. The main thing is to get the feral rye and cheat cleaned up," he said.

Swinehart uses a John Deere 455 drill with a straight flute to plant canola. It can be a challenge at first to plant a crop with such a small seed, but after a little experience the proper adjustments to the drill can be made.

"We have grass seed boxes for our drills, and we use them when planting canola. We had to put a half-speed kit on the drill to be able to slow it down enough, and open it a little wider for canola seed," he said.

His drill plants on 7.5-inch centers. Swinehart uses conventional tillage in his cropping system, and it's working well so far.

"We've had very good stands the last 3 years, even though the fall of 2012 was dry," he said.

Although no-till is a good production system for most crops, Swinehart said that having a residue layer on the surface when planting canola causes problems. The canola will set the crown too high if it comes up into a layer of residue, resulting in a condition called "high leg," he said. This can lead to more frequent winter injury problems. So

Swinehart uses a John Deere 455 drill with a straight flute and grass seed boxes to plant canola.

A half-speed kit was needed on the drill to slow it down enough for canola seed.

far, Swinehart has had good luck with winter survival in his canola by keeping the crown close to the ground.

He works the ground near planting time to prepare the seedbed. He's thinking about planting into a stale seedbed in the future, however, to help conserve moisture.

On his Roundup Ready canola varieties, he makes his first application of glyphosate in the fall, about 5 to 6 weeks after emergence. This has resulted in good weed control, he said. He adds an insecticide to his glyphosate application for diamondback moth control.

To fertilize his crop, he broadcasts 40 pounds of MESZ (MicroEssentials SZ) per acre and incorporates it about three weeks before planting. Then he puts down 35 pounds of 11-52-0 with the seed. In late winter, he'll top-dress with liquid nitrogen and 15 pounds of sulfur.

"In total, I like to have about 100 pounds of nitrogen available to the crop, including what's available in the soil. That's enough to support a yield goal of 40 bushels per acre," Swinehart said.

For seeding rates, he used 5 pounds per acre the first year he planted canola. Then he backed off to 4.5 pounds per acre the second year. The lower rate seems to give about the same yield potential, and reduced his costs somewhat. He likes to place the seed about 1 to 1.25 inches deep.

Swinehart also uses varieties with tolerance to sulfonylurea herbicide carryover. This allows him to use longer-residual herbicides, such as Finesse and Powerflex, in his wheat.

His second glyphosate application is made before the crop starts to bolt. He tank mixes boron with the glyphosate at that time. Boron is a micronutrient that is essential to canola growth and development.

Swinehart watches his crop closely for insects.

Swinehart scouts his canola for cabbage aphid at flowering.

Canola insurance tools benefit canola producers

One of the initial risk management hurdles for canola producers in Kansas to overcome was the lack of crop insurance availability. Until Senator Pat Roberts (Kan.) offered the "similar crops" amendment in 2007, producers had no options for insuring winter canola crops without actual production history.

The U.S. Canola Association petitioned Congress to pass the amendment, which gives the USDA Risk Management Agency (RMA) legal authority to use similar crops to show the 3 years of production history necessary to obtain a written agreement. Similar crops for the purposes of canola include winter wheat and other fall-planted cereals.

Written agreements are used when an insurable crop does not have a policy available in a particular county. This is the first step in getting full coverage for a crop. As demand for insurance products increases, new programs are added. For the first time in Kansas, five counties had full coverage programs for canola in fall 2013. These counties are Barber, Gray, Harper, Kingman, and Sumner.

As of late 2013, producers in nonprogram counties adjacent to and south of Interstate 70 can continue to insure canola with written agreements. Producers must meet with their insurance agents before August 31 to fill out the paperwork.

The recent increases in winter canola acres are driving the demand for new and improved risk management tools. In collaboration with the RMA, K-State agronomists hope to verify that winter canola production is successful north of Interstate 70 so producers across the entire state can insure winter canola through a written agreement. Results from two variety trials in north central Kansas will go a long way toward proving this possible.

Cooperative agreements between the RMA and Kansas State University have proven successful in increasing winter canola acres in Kansas. Projects like the "Helping Kansas Farmers Understand and Use Good Farming Practices for Canola" financially support winter canola schools and field days to educate producers on best management practices and risk management.

"Scouting for insects at least once a week starting in early February is important. In 2012 we had aphids at flowering, so we had to spray for them. Aphids can quickly cause a significant yield loss to our canola if we don't get them controlled as soon as we see them," he said.

Harvesting can be done either by swathing and picking the crop up later, pushing, or straight-cutting. Find a method that can be done quickly and almost at a moment's notice.

To harvest the crop, he swathes it and picks it up later. This still presents something of a challenge, he admits.

"Getting it swathed in a timely manner, just at the right stage, is hard. Hot, dry winds at that time of year can speed up maturity almost overnight and the crop can shatter if it is swathed too late," Swinehart said.

About a week after swathing, he uses custom cutters to harvest the crop with a pick-up head, he said. The timing of this operation is not as critical as the timing of swathing.

When putting the harvested seeds into the truck, it is important to make sure there are no holes, Swinehart said. "Use duct tape to plug up any holes in the truck, and the combine for that matter," he said.

Canola should yield about the same as wheat. Both crops should be able to yield about 30 to 40 bushels per acre most years, he added.

Marketing

Swinehart takes his canola to the co-op in Anthony, Kan. The price for canola is high enough to make it a very profitable crop, he added.

"The price recently (2013) has fluctuated between $10.50 and $12 per bushel. That makes it a more profitable crop than wheat for us, even though production costs are about $50 per acre or so greater for canola than wheat," Swinehart said.

Challenges

There are three main challenges in growing canola, Swinehart said:

1. Stand establishment.
2. Harvesting.
3. Finding a close delivery point.

Getting good stand establishment with a drill may take a little trial and error, but it is not a major problem as long as there is moisture in the soil, he said. "Just make sure there's no residue right over the seed row. Canola doesn't like that," he said.

Wheat and canola harvest may occur about the same time of year. Swinehart said in that case it is best to harvest canola first. There is usually more money invested in canola and it is more susceptible to shattering than wheat, he said.

> Don't use bin-run seed for canola. Buy new treated seed every year. This is a high-value crop.

Finding a close delivery point can be a challenge in some areas, although more and more elevators in Kansas are now dedicating a bin to canola. This is expected to continue as canola becomes more widely grown.

Advice for canola growers

For those who are interested in growing canola for the first time, Swinehart suggests they go to canola meetings and learn all they can. Also, farmers new to canola should talk to as many farmers as they can who have grown it, he added.

Before planting canola the first time, Swinehart said farmers should have a custom swather and harvester lined up if they don't have the equipment themselves. And if they don't have a sprayer, talk to local applicators in advance so they'll know about when they might be needed to make insecticide applications.

If farmers are already growing wheat, they may have all the equipment they'll need, he said. "We didn't buy any new equipment when we first started growing canola," he said.

Farmers should be aware that costs will be higher for canola than wheat, Swinehart said.

"We spend $25 to 27 per acre for seed. You don't want to use bin-run seed for canola like you might be doing for wheat, even if it were possible, he said. Buy new seed every year and have it treated with a fungicide and insecticide. This is a high-value crop," he said.

Finally, make sure you sign up for crop insurance, he said.

"Right now the crop insurance sign-up deadline for canola in Kansas is August 31. Don't wait until the last minute, though, if you're signing up for canola for the first time. Start on the paperwork about a month before the deadline," Swinehart said.

Dean Elvin — McPherson County

Growing canola in rotation with wheat is a great way to clean up feral rye and cheat problems, said Dean Elvin, McPherson County farmer.

His interest in canola began when he took over a field infested with feral rye.

"I had heard about canola, and it seemed to fit pretty well with our cropping needs. I tried some Roundup Ready canola on that field and it really helped me clean up the rye. Being a winter crop, canola is a better choice for me than soybeans or grain sorghum. Summer crops are highly dependent on the growing season. Canola has been more consistent," Elvin said.

Being a new crop to his area, canola presented some challenges, he added. To learn what was involved in growing canola, Elvin first talked to his DeKalb seed representative. He also read information on the Internet from Kansas State University and Oklahoma State University. But there were no nearby meetings or conferences to attend at that time (2007), so he didn't have the benefit of talking to experienced producers.

> Our canola usually yields about 36 to 40 bushels per acre. With the price of canola, that's a profitable level of production.

Production practices

Elvin has been growing canola for more than 6 years. It's been a bit of a learning curve, but he has a cropping system that is working well for him.

His canola fields are conventionally tilled to help the seed get out of the ground quickly. He first disks his wheat residue after harvest, then uses a chisel plow, and finishes seedbed preparation with his field cultivator.

Canola can also be planted no-till as long as the residue is removed before planting, but planting canola into wheat residue with minimal disturbance normally does not work well, he said.

Elvin's soils are mostly sandy loams, but they vary considerably – everything from heavy clay to blow sands. The pH is rather high, about 8.0 to 8.1, which can limit yields of all his crops to some extent.

To fertilize his canola, Elvin begins by spreading a mixture of 30 pounds of nitrogen, 20 pounds of P_2O_5, 10 pounds of K_2O, and 10 pounds of sulfur in the fall and incorporating it with tillage.

Elvin plants canola using either a Krause no-till drill or a Great Plains no-till drill with a coulter cart. Both are

Canola planted on 10-inch centers has broken dormancy as early as late February on Elvin's farm.

After bolting, scout canola fields three to four times a week for insects. Aphids can do a lot of damage if not caught quickly.

A rotation study was planted on Elvin's farm in 2010 to evaluate the effects of canola on wheat yield and quality.

A winter canola variety trial on Dean Elvin's farm near Marquette.

on 10-inch spacing and he uses a seeding rate of 5 pounds per acre. Timing of planting is important, he added.

"The best time to plant canola in this area is from September 10 to 25. We like to plant it before September 25. But canola can get too big in the fall if it is planted too early," he said. He plants his seed three-quarters of an inch deep. Planting right after a rain is a great option, in his experience.

Elvin plants mostly Roundup Ready varieties, but he has tried conventional canola varieties recently. All of his seed is treated with a fungicide and insecticide.

On his Roundup Ready canola, he makes his first application of glyphosate in the fall, and he has not needed to make a second application in the spring. He applies another 60 pounds of nitrogen in a winter topdress application, before the crop has bolted. This is done with dry fertilizer. He has not had any winterkill problems.

After the crop has begun bolting, he starts scouting his fields for insects. This is an intense time of year for his canola fields.

"I may scout each of my canola fields three to four times a week for insects. It really grows fast at that time of

Field days and variety trials offer good information for producers

One of the best ways to learn about canola production practices and varieties in Kansas is to attend a variety and research trial plot tour or field day on a producer's farm. This not only lets other producers see canola in a typical farm environment in their region, but also allows them to visit with other producers about the crop.

A good example of this is Dean Elvin's farm near Marquette. Elvin has allowed K-State to place winter canola variety trials on his farm for several years. The results have been excellent. In three of the first four growing seasons the plots were on his farm, yields were between 36 and 40 bushels per acre. In one year, hail damage reduced yields. The studies have given yields similar to what Elvin is harvesting.

Bob Schrock has had K-State test plots on his farm near Kiowa since 2009. In 2012, the National Winter Canola Variety Trial (NWCVT) averaged 42 bushels per acre, which is a typical yield for his area. The NWCVT contains nearly all the commercial winter canola varieties and hybrids available to growers in the United States. To download results from the NWCVT, follow the link *www.ksre.ksu.edu/bookstore/pubs/SRP1080.pdf*.

Having variety trials planted close by gives Elvin, Schrock, and other canola producers a firsthand look at the newest technologies available, as well as a reliable variety selection tool. These trials also give K-State and other participating companies a look at how well these varieties are adapted and how they perform across a number of diverse environments in the southern Great Plains.

K-State has hosted field days on all five producers' farms highlighted in this publication. Having direct contact with producers is an effective way to communicate good farming practices and risk management education. Producers who attend these field days come away with new tools and knowledge for managing risks on their farms.

year, and aphids can do a lot of damage if you don't catch them right away," Elvin explained.

"Sometimes it may be necessary to treat the fields with an insecticide in the spring," he says. Otherwise, he hasn't had to make any field passes with fungicides.

Harvest time also requires Elvin to watch his canola fields closely. To harvest canola, he uses the direct combining method.

"There are few draper heads in the area for swathing. We don't have enough acres of canola to warrant it. If you have a lot of acres, a swather is the best way to prepare the crop for harvest since you can more easily avoid shattering losses and uneven ripening," he said.

Elvin has allowed K-State Research and Extension to use his fields as demonstration fields to the public.

Direct combining means harvesting the standing crop with a header, just like in wheat. That's an inexpensive but slower way to harvest, and the fields must be watched closely to determine exactly when they're ripe but not so dry that they'll shatter.

"If the crop is ready to cut, I do it right away. It turns in a hurry," he said.

Canola is usually ready to harvest at about the same time as wheat, but harvesting canola always has priority over wheat if it comes down to harvesting one or the other on the same day, Elvin said. "If the seeds are dry, we can harvest canola in the morning when we can't cut wheat, so that gives us a little flexibility," he said.

For yields, Elvin said a reasonable goal for his area is 40 bushels per acre.

"Our canola usually yields about 36 to 40 bushels per acre. With the price of canola, that's a profitable level of production," he said.

Profitability and marketing

There's no elevator in his area that takes canola, and that presents a challenge, he said. He sells his canola to crushers in either Oklahoma City or Goodland, Kan.

"The crusher in Goodland will send a truck to my fields, so I don't have to haul it myself. That makes it more convenient," he said. Freight costs about $0.50 per bushel to do it that way.

Although canola's production costs are about $25 per acre more than wheat, his net profit on canola is greater, he said.

Challenges

The biggest challenge, by far, in growing canola is getting a stand, he said. That begins with seedbed preparation and includes calibrating the drill properly. "If there is no soil moisture it can be a challenge, plus you have to close down the drill as far as you can," he explained.

Insect control is also a challenge in that it requires frequent and careful scouting, especially after the crop bolts, he said.

Farmers must be aware that in some areas of Kansas, finding a delivery point for canola is another potential challenge, he added. He has had personal experience with that.

Advantages

Wheat has less foreign material and dockage following canola than following wheat; however, the biggest advantage of canola is its profit potential, Elvin said.

In addition, his wheat yields have been about 15 bushels per acre greater following canola than following wheat, he said. "There are more tillers and it is a little taller," he explained.

Advice for canola producers

Before growing canola for the first time, the best thing farmers can do is talk to someone in the area who has grown it. Elvin said he didn't have that opportunity when he started, and now realizes how much that would have helped.

It also will help to start early in deciding which varieties to plant, and in lining up a supply of seed. "Don't wait until the last minute to order your seed," he said.

Finally, decide which methods of planting and harvesting you plan to use. You may not need to buy any new equipment, but you may need to find someone who can plant or harvest your fields for you. If so, you'll want to contact them early, he said.

Greg Turek — Sumner County

The benefits of winter canola as a rotation crop became apparent to Greg Turek once he tried it.

"I should have started growing canola sooner than I did," he said. "It's amazing what one year of canola can do for wheat in terms of cleaning up feral rye and cheat. Growing canola saves me a lot of money compared to having soybeans and corn in my rotation."

On Turek's farm in Sumner County, the soil is primarily Bethany silt loam. The pH levels are a little low, but not low enough to cause problems for canola or wheat.

His crop rotations evolved over time.

"Several years ago, we were just in a continuous wheat cropping system," he said. "Then we began using a more complex rotation, such as wheat followed by double-crop soybeans, then full-season soybeans, then corn followed by double-crop wheat."

Turek began using soybeans and corn in the rotation as a way to control the cheat and feral rye. But both crops involve greater production costs, and they often do not yield well during hot, dry summers. Turek decided to try rotating his wheat with winter canola, and now most of his ground is in a wheat/wheat/canola rotation.

The exact rotations he uses also depend on what the landlords want.

"The rotation I'll use on their land is a mutual decision," Turek says. "It depends on what condition their fields are in and the economics of the various options. In many cases, canola is the best option."

Turek's brother, Tim, and father, Gene, tried canola earlier, but their attempts in 2001 and 2002 did not go well. Emergence was poor the first year, and as a result the crop suffered winterkill. The next year brought hail after the crop was swathed but before it could be harvested, causing the seeds to shatter out of the pods.

"There was no crop insurance for canola back then," Turek said. "The early pioneers in canola production in this region not only had to figure out what works and what doesn't work, they had to do it knowing that if the crop didn't make it they would just be out of luck."

When Turek came back to the farm in 2003, he knew something had to be done to control the feral rye problems in wheat. After a few years of trying rotations with soybeans and corn, he went online to find out more about winter canola.

"There was a lot of information on the Internet by that time," he said. "I also went to the Canola U conference. But there still weren't any other farmers in my immediate area who had tried growing canola. At some point, I figured you just had to jump into it and see what happens."

Turek planted his first canola crop in 2010 after getting some advice on what he needed to do.

"The guy who swathed the crop for my brother and father several years earlier, and who also chopped our corn every so often, told us we needed to have a draper swather and pickup head."

Production practices

Turek plants his canola after wheat. In the summer before planting, he disks the wheat residue lightly and applies 60 pounds per acre of nitrogen as anhydrous ammonia. After that application, he goes over the fields with a 16-bar harrow.

Adding canola to a crop rotation can help control feral rye in subsequent wheat crops.

After applying nitrogen, Turek uses a 16-bar harrow to prepare the ground for planting.

Turek's John Deere 1890 single disk no-till air drill does a good job of seed placement.

In 2012, there was almost no rain during the summer to help break down the wheat residue. Turek used a vertical tillage implement twice in mid- to late-July, before harrowing, to make a seedbed clean enough for canola.

Turek likes to plant canola between September 15 and 20 if soil moisture is adequate. He says if it's planted too late, and there is an early fall freeze, the canola could be injured.

Turek uses a John Deere 1890 single disk no-till air drill to plant the canola on 7.5-inch centers, with a seeding rate of 5 pounds per acre to ensure a good stand. The drill does a good job of seed placement, he says, and emergence is usually excellent. In his system, it's important to get the wheat straw broken down enough with the vertical tillage implement and harrow so there's not too much residue on top of the canola seedlings when they emerge.

"You want the crown to sit right on the ground," he said. "If there's too much residue around the seedling after it emerges, the crown can be too high, which can lead to winterkill problems."

Burning is another way to clear off wheat residue, but Turek doesn't like to do that.

"I like to practice minimum tillage instead," he said. "That allows me to use an anhydrous applicator, gives the plants some protection against the wind, and reduces evaporation losses. Yet there's not so much residue present that it causes problems for the emergence and early growth of canola."

Turek uses Roundup Ready varieties with an insecticide and fungicide seed treatment. He makes the first application of glyphosate shortly after emergence to control volunteer wheat, feral rye, cheat, and bindweed. Getting control of those weeds early is important, he says.

Turek uses a draper swather with a roller attachment to prepare his canola for harvest.

"If you have any competition from broadleaf weeds or grasses in the first few weeks while the canola crop is trying to get established, it'll kill the canola."

The only other field operation he may have to do in the fall is spray for diamondback moth larvae. In the winter, he top-dresses the canola with nitrogen.

"The amount of nitrogen I use at this time depends on the condition of the crop," he said. "If everything looks average to good, I'll put on another 40 pounds of nitrogen, for a total of 100 to 110 pounds for the season.

"If there's only a 20 percent stand in January, I won't put on that much nitrogen in the top-dress application. But if there's at least a 30 to 40 percent stand, I'll put on all the rest of the nitrogen the crop needs because it can still make a good yield."

He may add another glyphosate treatment to the nitrogen topdressing, he says, if there are any weeds in the field at the time.

Turek invested in some equipment such as this pick up header to harvest his canola.

Canola starts to bolt in early April, and that's when Turek intensifies insect scouting.

"We'll start scouting the fields once or twice a week after bolting. Aphids are the biggest threat at that time. I've sprayed for aphids each of the last 2 years."

Turek prefers the swathing method to prepare his crop for harvest, he says, and the family bought a swather with a 21-foot draper and a pickup head.

"Swathing gets me in the field earlier than direct combining, and well before wheat harvest begins. You just have to be sure to swath it as soon as it needs to be swathed — which is at about 40 to 60 percent seed color change. If we don't get it swathed at that time, then it's too late and we'll just go ahead and straight-cut it."

In 2010-11, Turek's first crop yielded 20 bushels per acre. The next year it yielded 35 to 40 bushels per acre. He believes it has to potential to yield 50 bushels per acre in his area.

"I'm not disappointed if my canola only yields 20 bushels per acre," he said. "The canola does a lot for my operation, even if it only breaks even in terms of costs and returns. Canola helps me get my fields free of weeds, and this helps my wheat crops tremendously."

> Not only does it allow me to clean up my fields, but I also get a yield boost by growing wheat after canola.

Production costs of canola are greater than those for wheat. The seed costs about $30 per acre, and insecticide is applied twice a year. Harvesting costs are greater than those for wheat, since the crop is swathed, then harvested with the pick-up head. There has been no fungicide cost for canola, which represents a savings when compared to wheat.

"Overall I'd say canola costs about $20 to $30 per acre more than wheat to produce," he said.

Turek hauls his canola to an elevator in Anthony, which minimizes the marketing costs. Before harvest, he uses duct tape to seal places canola seed could leak out of the truck and combine.

Challenges

The biggest challenge in growing canola is getting a stand, Turek says. Having enough soil moisture for good emergence is difficult to control. Producers must be sure the drill used gives good seed-to-soil contact in the top inch.

Harvesting is also a challenge, although producers could hire someone to swath the crop and rent a pick-up head. Timing the harvest right can be tricky, Turek says.

Management of previous crop residue important for canola

No-till farming practices reduce soil erosion, increase water infiltration, conserve soil moisture, and improve soil health. Consequently, the first adopters of canola initially planted canola using low-disturbance no-till; however, on-farm observations revealed that residue increased the crown height of canola plants, perhaps making them more susceptible to cold injury and winterkill. The confusing part of this story is producers were able to get an excellent stand in no-till, but maintaining it over the winter was the problem.

Winter canola stand losses in low-disturbance no-till led to a series of experiments examining the influence of residue and tillage on stand establishment, winter survival, and grain yield. Several sites were selected in Kansas and Oklahoma to address residue management, tillage effects, and equipment differences. The results showed drills using double-disk openers with coulters or hoe openers improved stand establishment, winter survival, spring vigor, and yield in no-till compared with drills using double-disk openers without coulters. Furthermore, conventional tillage increased survival, spring vigor, stand density, plant height, and yield compared to no-till.

Removing residue by burning, tillage, or raking/removing resulted in greater fall vigor, better tolerance to fall freezes, and higher winter survival compared to no-till in heavy residue. Removing residue by any method allowed the crown to remain closer to the soil surface. Burning residue provided effects similar to other removal methods, and left about 40 to 50 percent of the residue in place.

"If the weather is dry and the canola is ready, you'd better be able to get it swathed or harvested right away. Otherwise shattering will be a problem. It's a learning curve."

Wheat and canola harvest can overlap. When that happens, Turek says he'd harvest the canola first every time.

"For one thing, canola is the more valuable crop. And secondly, canola shatters worse than wheat if it's not harvested on time."

Advantages

For Turek, the biggest advantage of growing canola is that it allows him to control feral rye and cheat in just one year.

"One year of canola does wonders for my wheat crop," he said. "Not only does it allow me to clean up my fields, but I also get a yield boost by growing wheat after canola. My wheat has better quality when it follows canola."

At low population levels, cabbage aphids may be difficult to find, often they are first found in the bud clusters of flowering canola.

Canola can be quite profitable, depending on yields and prices. A 40-bushel canola crop is profitable at today's prices, Turek says. And getting 40 bushels per acre is not difficult in a normal year.

Advice for canola growers

For those getting into canola for the first time, Turek suggests attending a university canola school or workshop.

"The meetings I went to were very helpful," he said. "They helped me know what I was getting into and gave me a good chance to succeed."

It's also important to talk to farmers with experience growing canola.

"No one who has grown wheat should be at all scared of growing canola," Turek said. "If you can grow wheat, you can grow canola. You can use the same equipment for both crops."

The bottom line is that canola is a wonderful crop, Turek says.

"It's here to stay. Anyone who starts growing canola will be happy they did."

Burning residue can be a controversial issue, but burning residue before planting canola is different than what most Kansas producers may be accustomed to seeing. If burning is a feasible option, the burn should be conducted a day or two before planting. Chemical weed control can be used to keep fields weed-free over the summer months. This allows producers to take advantage of most of the benefits of the residue. In addition, the burn happens at a cooler time of the year resulting in less residue being removed.

For producers interested in no-till, alternative low-disturbance methods can be used successfully with canola. Some producers have experimented with using vertical tillage tools to prepare seedbeds for planting winter canola. Vertical tillage creates low soil disturbance and incorporates modest levels of residue into the soil. The disturbance created is optimal for canola establishment because excessive tillage is often detrimental. Other producers have used strip-till equipment to move residue a short distance, then planted in 30-inch rows with row crop planters. Because residue is so highly valued, producers are finding new and innovative ways to move it and grow winter canola successfully.

The effects of residue on canola establishment, winter survival, and yield are still being investigated. A final conclusion as to why residue reduces winter survival has not been determined, but suggestions include microclimate effects, an elevated crown, and residue allelopathy. In the future, K-State researchers will investigate 30-inch row canola further. However, the take-home message remains the same: the previous crop residue must be moved from the seed row.

Tyson Good — Gray County

"Canola really fits in best in southwest Kansas on ground with short-water wells. Farmers have been growing corn under these conditions, and they know how much management it takes to make corn work with short-water wells," said Tyson Good, Gray County farmer.

"Sometimes they may tend to go the other way with wheat, where they'll just put wheat in the ground and not pay much attention to it. If farmers manage canola under irrigation like they manage corn, they'll be successful. Once they see they can make money with canola on short-water wells and get the rotational benefits from it, they'll be happy with canola," he concluded.

Once they see they can make money with canola on short-water wells and get the rotational benefits from it, they'll be happy with canola.

About two-thirds of Good's production, primarily on sandy soils, is dryland and one-third is irrigated.

The declining water table is causing some changes in cropping patterns. It's important to find ways to make the available water work efficiently, and get the greatest return for each inch of water applied.

One of the advantages of growing canola on limited irrigation in southwest Kansas is that it requires the majority of its water at a different time of year than corn. This helps Good spread out available water on certain wells.

He explained that the peak water demand for winter canola is in the spring, while corn requires most of its water in early to mid-summer, depending on the hybrid maturity and when it's planted.

Production practices

He has worked irrigated canola into his rotations where he has wells with a capacity of 550 gallons per minute or fewer. His first canola crop was planted strip-till into corn residue on two half-circles. In theory, canola should be a good alternative to wheat when planting into corn residue under irrigation. Wheat planted after corn can have problems with Fusarium head blight, while canola does not have any diseases in common with corn or wheat.

Because of timing of the canola planting operation, Good has decided to plant canola after wheat instead.

"When planting after corn, it seemed like there might be some years that we wouldn't be able to get the canola planted on time. Canola has to be planted earlier than wheat, so I'm thinking it will be less risky to plant canola after wheat instead of trying to squeeze it in after corn. Then I'm sure we'll be able to get the canola planted on time," Good said.

Using a row crop planter gives consistent seeding depth and allows the use of strip-tillage for efficient fertilizer applications.

Good plants canola on 30-inch rows to manage residue under limited irrigation in southwest Kansas.

The ideal time for planting canola in his area is September 1 to 10, he said. Finding the right time to plant canola is a balancing act, and it has a big effect on winter survival and ultimately on profitability, he explained. There are potential penalties for planting too late, or too early.

"You want to have a fair amount of growth and root development by winter," he explained. "If you wait until late September to plant, you run the risk of not having good enough plant development, which can lead to poor winter survival."

"On the other hand, if you plant too early, you might end up with so much growth that the crown gets set too high going into winter. This can be a bigger risk if there is a lot of carryover nitrogen in the soil," he added.

Good plants canola with a John Deere row crop planter in 30-inch rows. Calibrating a planter for canola is challenging because the seed is so small, he said. However, planting in wide rows allows him to lower his seeding rate. He uses a seeding rate of about 185,000 seeds per acre, which is roughly 300,000 seeds per acre less than what would normally be used when planting with a drill in narrow rows at a seeding rate of 5 pounds per acre.

A planter has a few advantages over a drill, he said. Planters can do a better job of giving consistent seeding depth. Also, it's easier to apply nitrogen and phosphorus in a deep band with strip-till, which increases fertilizer efficiency.

A series of hard freezes in late spring of 2013 reduced plant height and delayed branching of winter canola in southwest Kansas. In a typical year, the canola canopy should be closed.

But maybe the biggest advantage is planters allow the use of trash whippers to clear residue away from the seed row. This allows for greater flexibility in crop rotations.

"I want to leave the wheat residue on the soil to protect the canola seedlings from hot windy conditions right after they've come up, so I want to plant it no-till," he said. "There's no way I could plant canola no-till with a drill, unless I used an air seeder hoe drill with a narrow sweep. Canola doesn't do well if there is residue right in the seed row."

Canola establishment and planting dates for southwest Kansas

According to canola producers in Kansas, stand establishment and harvest management are the two major agronomic challenges for growing winter canola. Stand establishment, planting date, and winter survival are closely connected, especially in the more arid climate of the High Plains.

A study conducted by agronomists at the Southwest Research-Extension Center shows these challenges can be overcome by using best planting practices and growing a variety adapted to the region.

The study evaluated five planting dates between August 15 and October 15 and two tillage methods on canola establishment, winter survival, and yield. Fall plant density, fall crown height, fall vigor, winter survival, spring plant density, spring vigor, and yield were measured.

Planting date affected all measurements while tillage only affected yield. Conventional tillage yielded 8 percent more than no tillage. Yield was affected most by winter survival. Tillage did not influence winter survival in this study, although other K-State research has found tillage or high-disturbance row openers increase winter survival. The high-residue disturbance row opener used in this study might have improved winter survival in no tillage.

This study concluded that winter canola must be planted earlier than previously thought. Planting dates between August 25 and September 15 are optimum for winter survival and grain production in southwest Kansas. With more research, no-tillage winter canola yields might be increased and may be comparable to conventional tillage.

For more information about winter canola establishment and planting date strategies for western Kansas, see the article online in Crop Management, *Effects of Planting Date and Tillage on Winter Canola*, Holman et al., 2011. *www.plantmanagementnetwork.org/sub/cm/research/2011/canola/canola.pdf*

Good uses a MacDon draper header to direct combine his winter canola.

He plants canola about a half-inch deep, so getting good seed placement with the planter is also important. He has found that canola planted using a planter with 30-inch rows comes up better and results in more vigorous stands than where it is planted in 7.5-inch rows with a drill.

He puts about 5 gallons of a 10-34-0 starter in the furrow at planting time, which helps winter survival, he said. The rate is less than what he'd put on for corn or soybeans because canola is an oilseed and is more prone to fertilizer injury in-row. He uses fertilizer tubes with Keaton seed firmers.

Canola requires 2.5 units of nitrogen per bushel of yield. With a 50-bushel goal under limited irrigation, canola requires 125 units of nitrogen. Part of that may come from carryover nitrogen, so he has a profile-N test taken before planting every year. If more nitrogen is needed, he'll sidedress the canola in February or March.

He prefers to put on most of the nitrogen in the spring. He doesn't like to stimulate too much growth before winter, but wants to ensure the nitrogen is present when canola needs it for seed production.

He grows Roundup Ready varieties and conventional hybrids. "You can't let mustards get hold in canola fields. Henbit and mustards are still easy to control with glyphosate, so using Roundup is an advantage for us," he said.

The first year with canola, his crop suffered hail damage, but still yielded 42 bushels per acre.

Good direct combines his canola. This makes harvesting a one-pass process.

"I started out using my 8-row John Deere row crop header for canola. But then I bought a MacDon FlexDraper header. The draper header helps keep shattering to a minimum," Good explained.

He has to watch his canola closely at harvest. It doesn't always ripen evenly, or even follow the same pattern from year to year. It should be harvested when as much of the crop is ripe as possible to avoid shatter losses. He expects to see a few green pods at harvest but those typically blow out the back of the combine. Moisture content must be 10 percent or less to be taken to the elevator.

Irrigation management can affect harvest management, he added.

"I've learned that we have to shut off the water early enough or it won't dry down evenly. I still have a lot to learn about irrigating canola, though. I don't want to let the profile get too dry during pod set and seed fill, or it will reduce yields. This is still a work in progress," he said.

Good sells his canola to ADM in Montezuma. Having a nearby elevator to take canola is one reason he started growing it.

Challenges

The biggest challenge in growing irrigated canola in southwest Kansas is winter survival, Good said. Nothing else is even close.

"You have to figure out how to get just enough top growth and root development in the fall to be able to survive the winter. At the same time, you don't want to get it going so strong in the fall that the growing point sets up too high, which can result in winterkill," he explained.

This balancing act is influenced by fall fertilizer rates, residue management, and planting dates. If canola can make it through the winter, the rest of the season is mostly careful scouting for insects, keeping weeds under control, and anticipating ripening to avoid shatter losses.

Advantages

There are three main advantages of canola, Good said.

1. High profit potential on short-water wells.
2. Rotation benefits for wheat.
3. Future growth in market demand for healthy oils.

Advice for canola growers

Having a consultant and crop scout for advice is important, Good said. One of the consultants he has learned from is Brian Caldbeck, with Caldbeck Consulting, in Philpot, Kentucky.

Also, producers new to canola should read as much as possible before trying it for the first time. If available, it is helpful to talk to other producers who have some experience in growing canola, he said.

Finally, he said irrigators should be prepared to give as much effort managing canola as they would give to corn.

For more information

Great Plains Canola Production Handbook, MF2734
www.ksre.ksu.edu/bookstore/pubs/mf2734.pdf

Harvest Management of Canola, MF3092
www.ksre.ksu.edu/bookstore/pubs/MF3092.pdf

National Winter Variety Canola Trial — 2012, SRP1080
www.ksre.ksu.edu/bookstore/pubs/SRP1080.pdf

Riley Canola, L929
www.ksre.ksu.edu/bookstore/pubs/L929.pdf

Kiowa Canola, L928
www.ksre.ksu.edu/bookstore/pubs/L928.pdf

Wichita Canola, L920
www.ksre.ksu.edu/bookstore/pubs/L920.pdf

Canola Cost-Return Budget in South Central Kansas, MF2421
www.ksre.ksu.edu/bookstore/pubs/mf2421.pdf

Michael J. Stamm
Associate Agronomist
Department of Agronomy
Kansas State University

Steve L. Watson
Assistant Scientist
Department of Agronomy
Kansas State University

Kansas State University Agricultural Experiment Station and Cooperative Extension Service

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